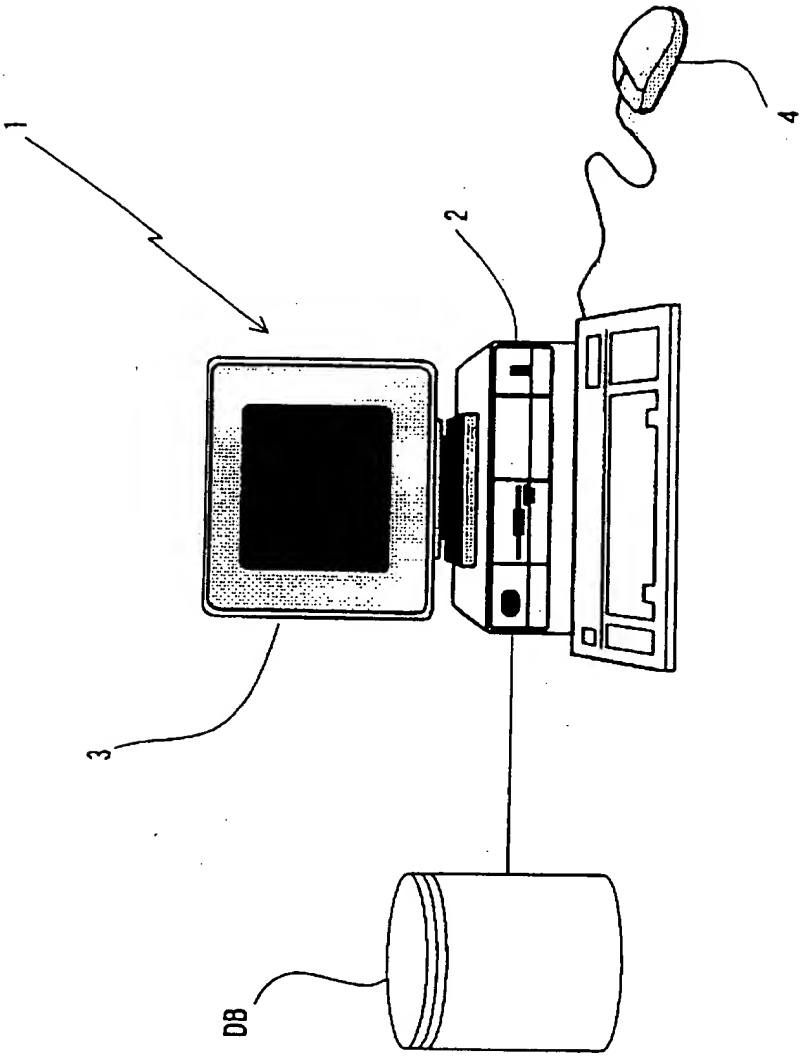
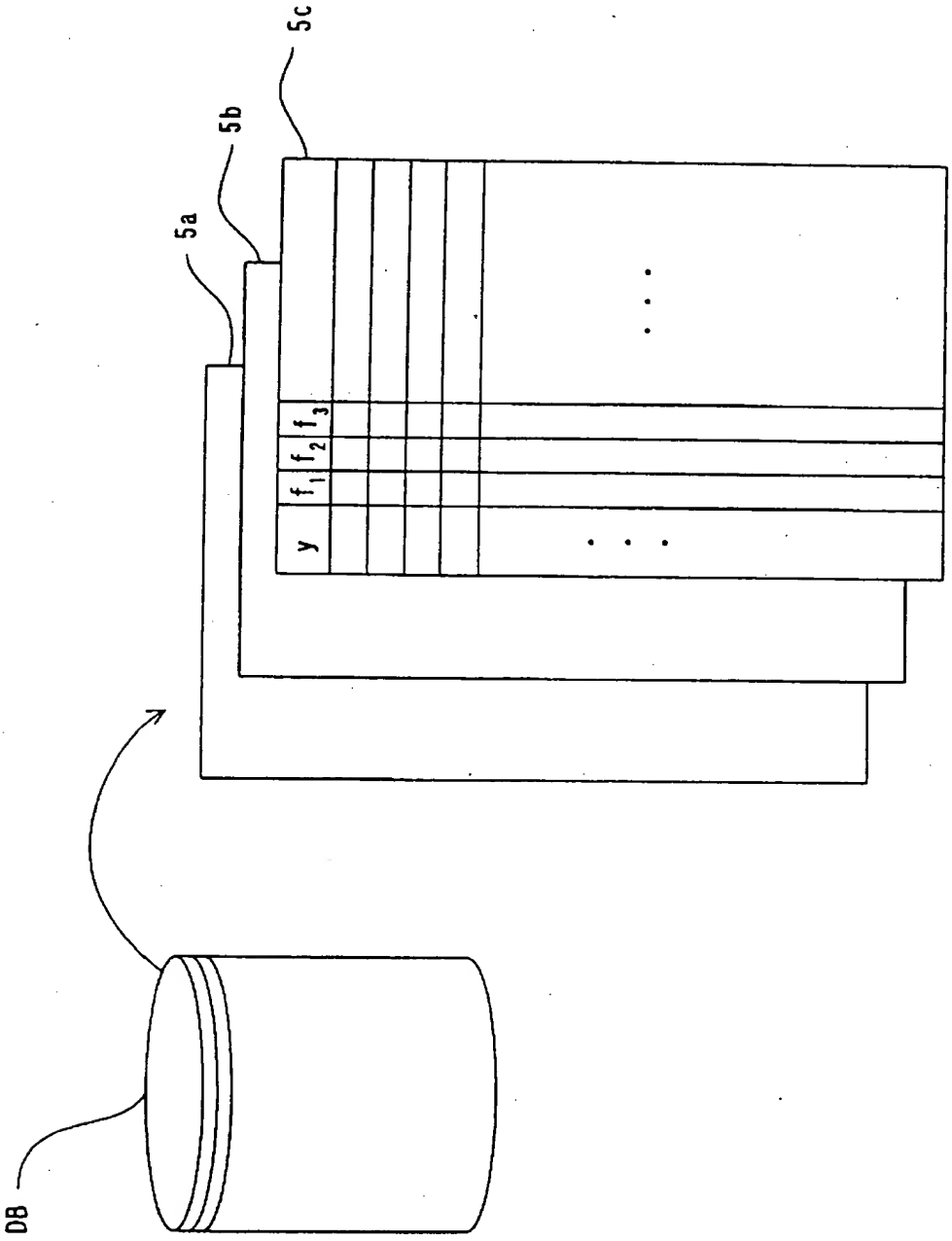
[Document type] Drawing

[Figure 1]



[Figure 2]

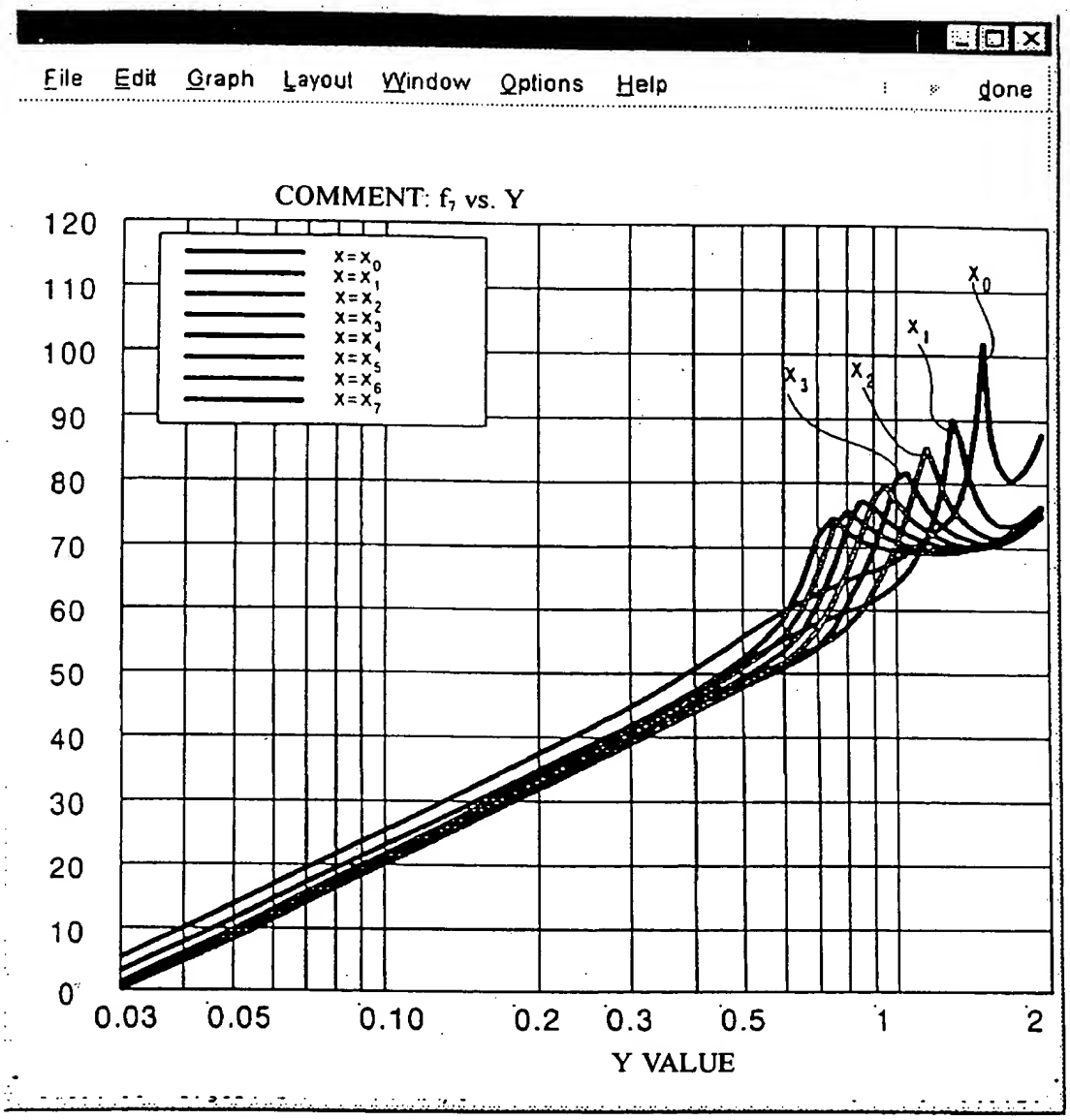


[Figure 3]

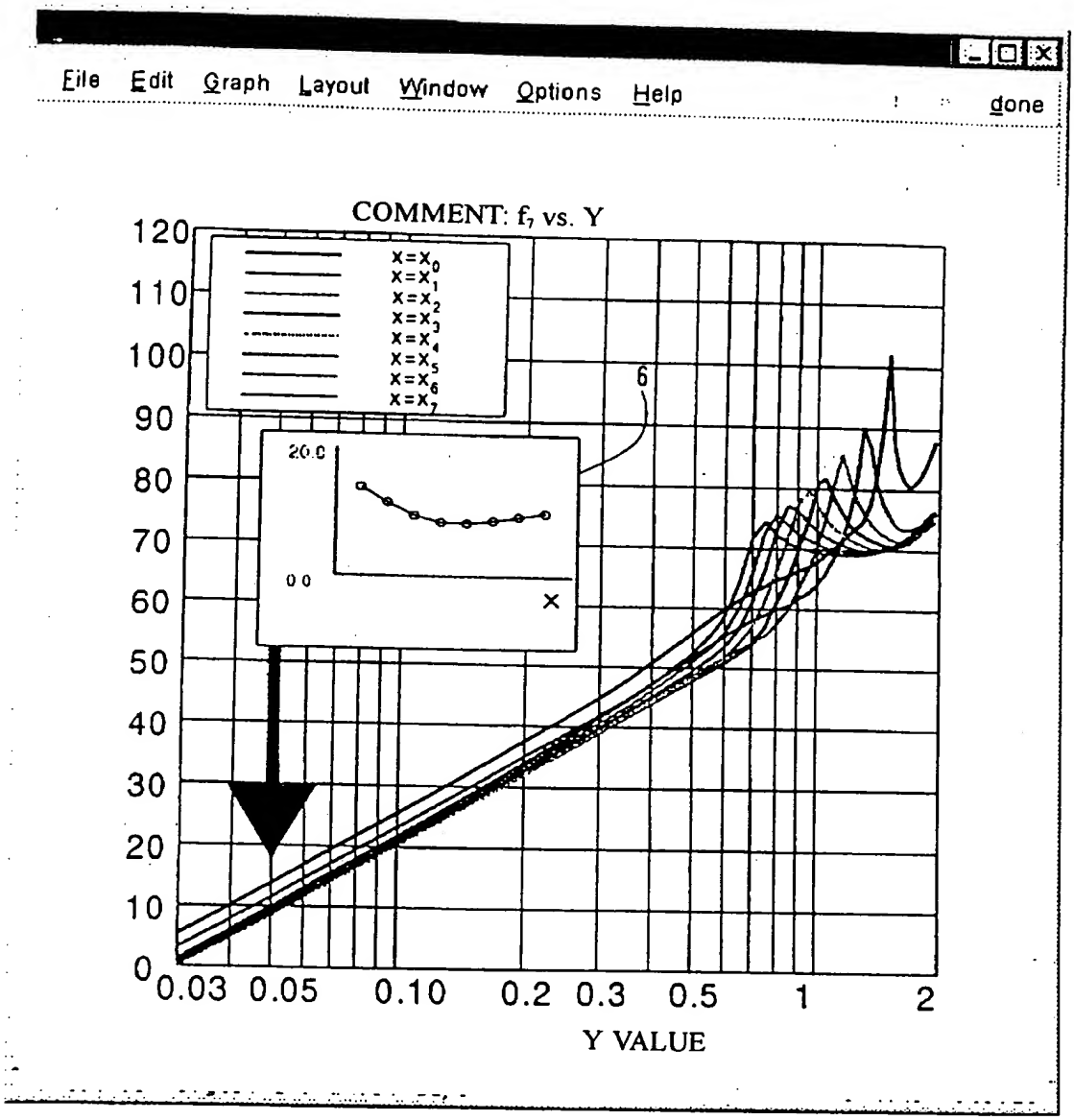
5a

$x=x_0$							
y	f_1	f_2	f_3	f_4	f_4	f_5	f_6
0.03	0	0	0	3	0	0	5
0.05	0	0	0	12	0	0	14
0.10	0	10	11	24	0	0	26
0.15	0	19	18	30	0	0	33
0.20	7	27	23	35	0	0	38
0.25	13	32	26	39	0	0	41
0.30	18	37	29	42	0	0	45
0.35	23	42	31	45	3	2	48
0.40	25	45	33	47	6	9	51
0.45	26	49	35	48	9	14	53
0.50	26	51	36	50	12	19	56
0.55	26	54	37	51	14	24	58
0.60	27	56	38	53	15	28	60
0.65	28	57	38	54	17	32	61
0.70	29	59	38	55	18	35	63
0.75	30	60	38	56	20	37	64
0.80	31	61	38	57	20	39	65
0.85	33	61	36	57	21	40	66
0.90	35	62	32	58	22	41	66
0.95	37	62	16	59	21	43	67
1.00	40	63	33	59	21	44	68
1.05	43	64	41	60	18	45	69
1.10	46	65	47	60	11	47	70
1.15	49	67	51	60	13	48	71
1.20	53	68	55	61	25	50	73
1.25	56	69	59	61	32	52	74
1.30	60	71	63	62	38	55	75
1.35	65	72	68	63	44	59	78
1.40	70	75	73	67	50	64	82
1.45	78	81	82	77	59	73	90
1.50	91	92	95	91	73	86	102
1.55	77	78	81	79	60	72	88
1.60	72	75	77	76	57	68	83
1.65	70	75	75	75	55	67	81
1.70	68	76	74	75	54	67	80
1.75	67	77	73	75	54	67	81
1.80	66	78	73	75	54	69	82
1.85	66	80	72	76	54	71	84
1.90	66	82	72	76	54	73	86
1.95	66	85	72	78	54	76	88
2.00	66	89	72	80	54	80	92

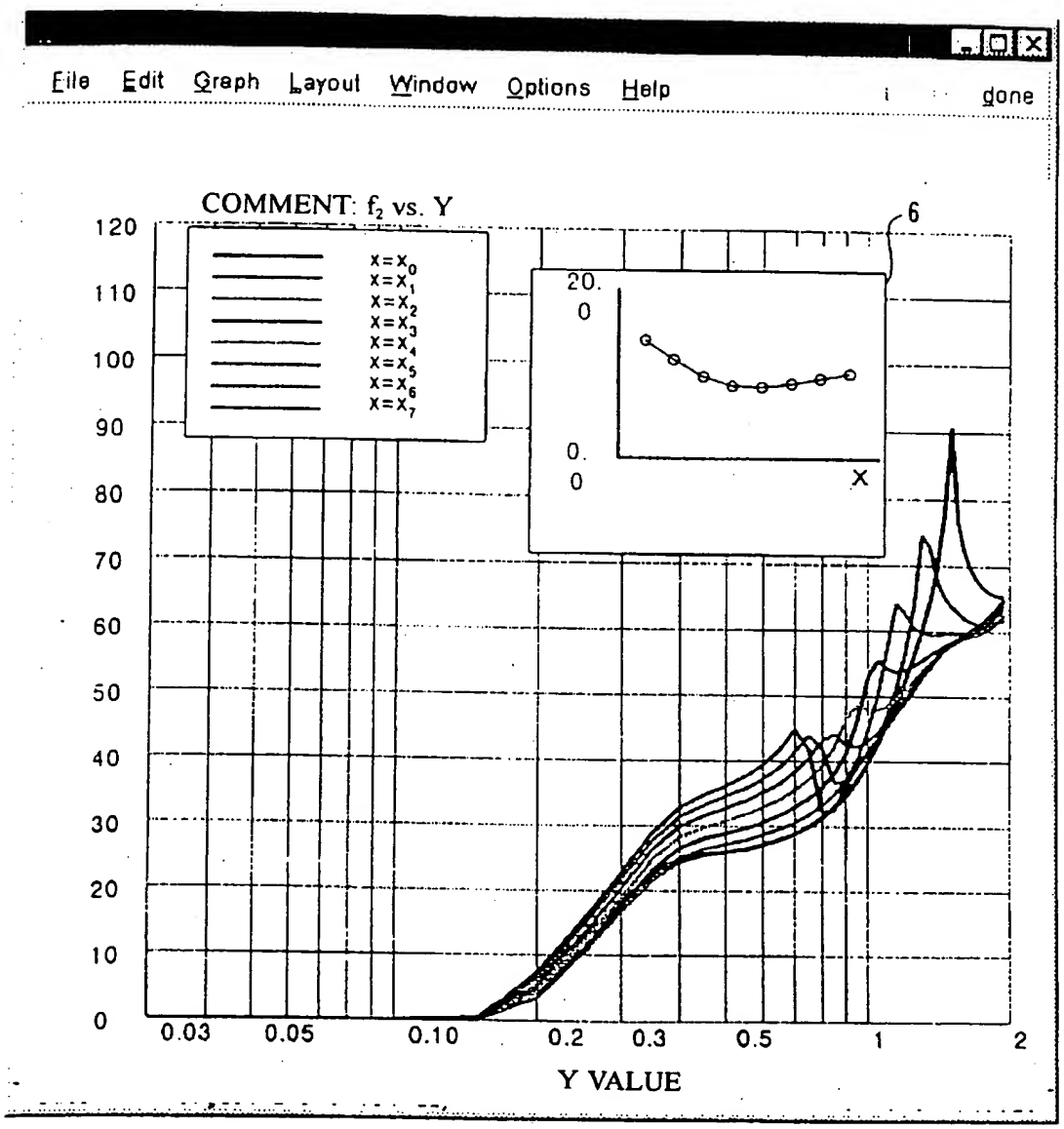
[Figure 4]


File Edit Graph Layout Window Options Help done
COMMENT: f7 vs. Y
120
110
100
90
80
70
60
50
40
30
20
10
0
0.03
0.05
0.10
0.2
0.3
0.5
1
2
Y VALUE
X=X0
X=X1
X=X2
X=X3
X=X4
X=X5
X=X6
X=X7
X0
X1
X2
X3

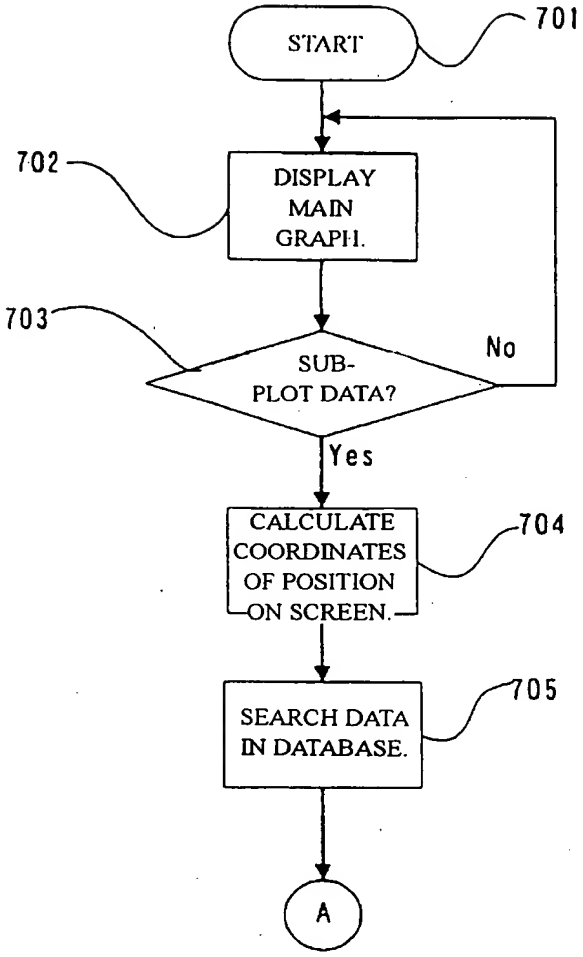
[Figure 5]


File Edit Graph Layout Window Options Help done
COMMENT: f7 vs. Y
120
110
100
90
80
70
60
50
40
30
20
10
0
0.03 0.05 0.10 0.2 0.3 0.5 1 2
Y VALUE
X=X0
X=X1
X=X2
X=X3
X=X4
X=X5
X=X6
X=X7
6
20.0
0.0
X

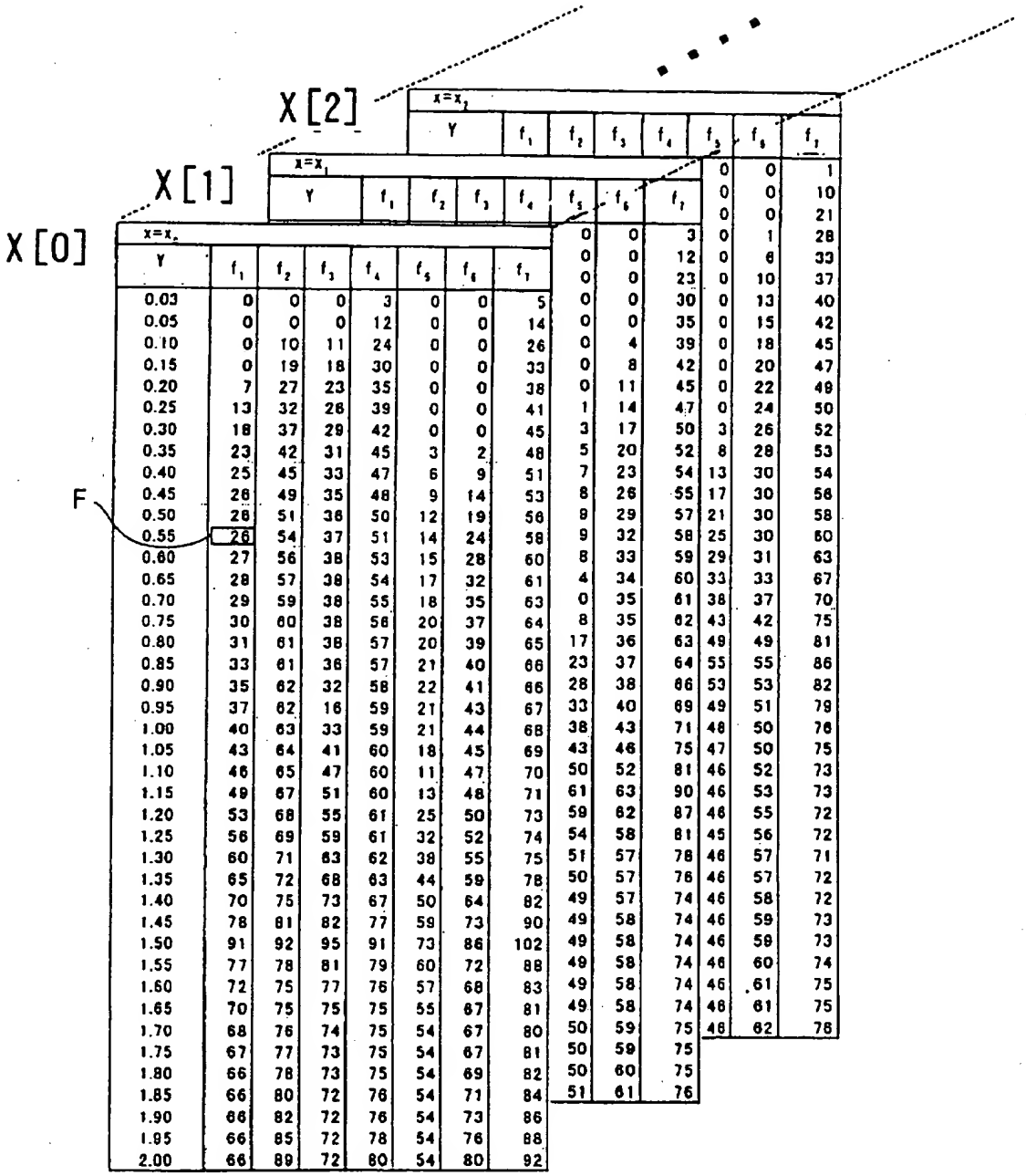
[Figure 6]


File Edit Graph Layout Window Options Help
done
COMMENT: f_2 vs. Y
6
$x=x_0$
$x=x_1$
$x=x_2$
$x=x_3$
$x=x_4$
$x=x_5$
$x=x_6$
$x=x_7$
20.0
0.0
X
120
110
100
90
80
70
60
50
40
30
20
10
0
0.03
0.05
0.10
0.2
0.3
0.5
1
2
Y VALUE

[Figure 7]


START
701
DISPLAY MAIN GRAPH.
702
SUB-PLOT DATA?
703
No
Yes
CALCULATE COORDINATES OF POSITION ON SCREEN.
704
SEARCH DATA IN DATABASE.
705
A

[Figure 8]



X[0]

x=x0 Y	f1	f2	f3	f4	f5	f6	f7
0.03	0	0	0	3	0	0	5
0.05	0	0	0	12	0	0	14
0.10	0	10	11	24	0	0	26
0.15	0	19	18	30	0	0	33
0.20	7	27	23	35	0	0	38
0.25	13	32	28	39	0	0	41
0.30	18	37	29	42	0	0	45
0.35	23	42	31	45	3	2	48
0.40	25	45	33	47	6	9	51
0.45	28	49	35	48	9	14	53
0.50	28	51	36	50	12	19	56
0.55	26	54	37	51	14	24	58
0.60	27	56	38	53	15	28	60
0.65	28	57	38	54	17	32	61
0.70	29	59	38	55	18	35	63
0.75	30	60	38	56	20	37	64
0.80	31	61	38	57	20	39	65
0.85	33	61	36	57	21	40	66
0.90	35	62	32	58	22	41	66
0.95	37	62	16	59	21	43	67
1.00	40	63	33	59	21	44	68
1.05	43	64	41	60	18	45	69
1.10	46	65	47	60	11	47	70
1.15	49	67	51	60	13	48	71
1.20	53	68	55	61	25	50	73
1.25	56	69	59	61	32	52	74
1.30	60	71	63	62	38	55	75
1.35	65	72	68	63	44	59	78
1.40	70	75	73	67	50	64	82
1.45	78	81	82	77	59	73	90
1.50	91	92	95	91	73	86	102
1.55	77	78	81	79	60	72	88
1.60	72	75	77	76	57	68	83
1.65	70	75	75	75	55	67	81
1.70	68	76	74	75	54	67	80
1.75	67	77	73	75	54	67	81
1.80	66	78	73	75	54	69	82
1.85	66	80	72	76	54	71	84
1.90	66	82	72	76	54	73	86
1.95	66	85	72	78	54	76	88
2.00	66	89	72	80	54	80	92

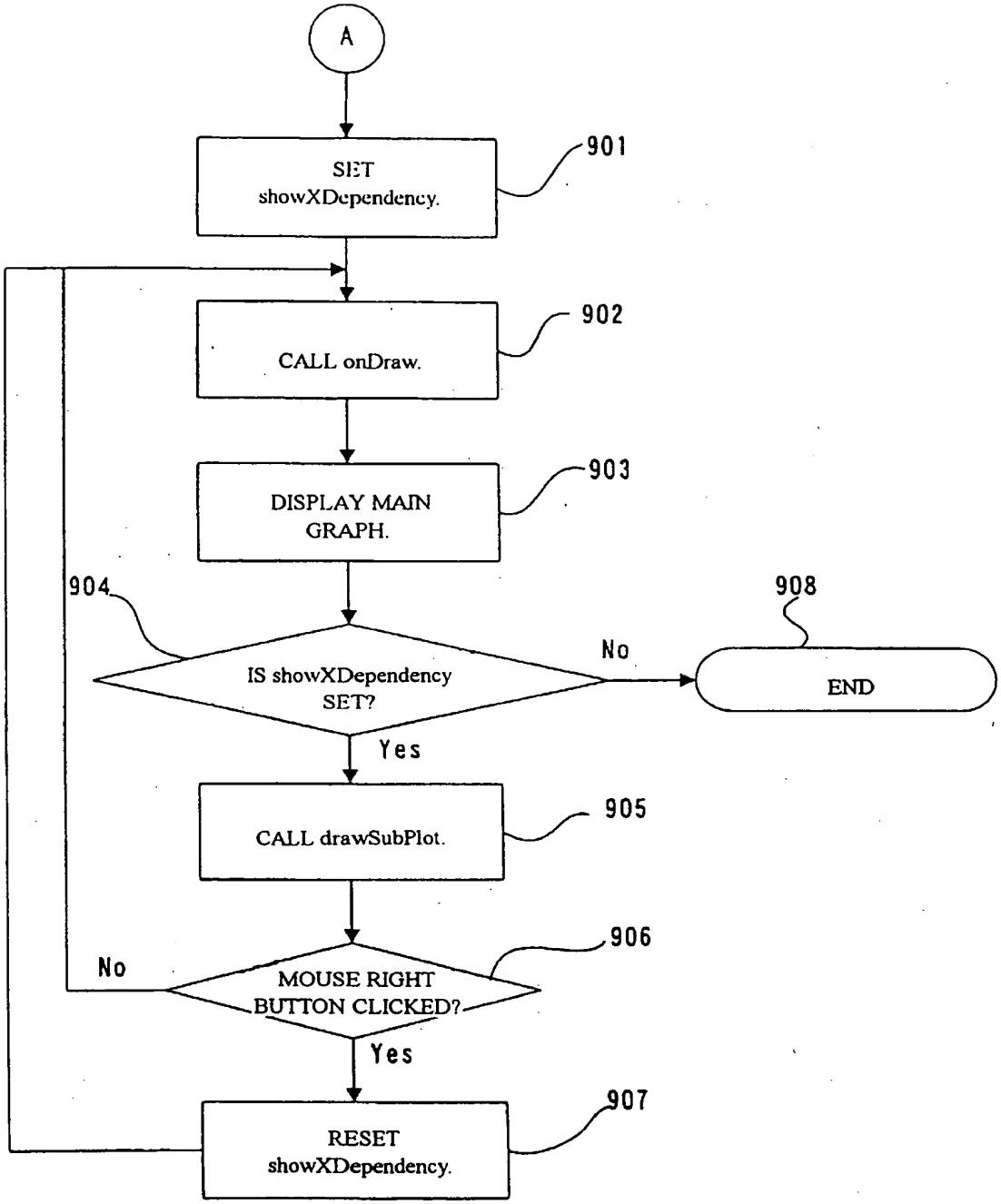
X[1]

x=x1 Y	f1	f2	f3	f4	f5	f6	f7
0.03	0	0	0	3	0	0	5
0.05	0	0	0	12	0	0	14
0.10	0	10	11	24	0	0	26
0.15	0	19	18	30	0	0	33
0.20	7	27	23	35	0	0	38
0.25	13	32	28	39	0	0	41
0.30	18	37	29	42	0	0	45
0.35	23	42	31	45	3	2	48
0.40	25	45	33	47	6	9	51
0.45	28	49	35	48	9	14	53
0.50	28	51	36	50	12	19	56
0.55	26	54	37	51	14	24	58
0.60	27	56	38	53	15	28	60
0.65	28	57	38	54	17	32	61
0.70	29	59	38	55	18	35	63
0.75	30	60	38	56	20	37	64
0.80	31	61	38	57	20	39	65
0.85	33	61	36	57	21	40	66
0.90	35	62	32	58	22	41	66
0.95	37	62	16	59	21	43	67
1.00	40	63	33	59	21	44	68
1.05	43	64	41	60	18	45	69
1.10	46	65	47	60	11	47	70
1.15	49	67	51	60	13	48	71
1.20	53	68	55	61	25	50	73
1.25	56	69	59	61	32	52	74
1.30	60	71	63	62	38	55	75
1.35	65	72	68	63	44	59	78
1.40	70	75	73	67	50	64	82
1.45	78	81	82	77	59	73	90
1.50	91	92	95	91	73	86	102
1.55	77	78	81	79	60	72	88
1.60	72	75	77	76	57	68	83
1.65	70	75	75	75	55	67	81
1.70	68	76	74	75	54	67	80
1.75	67	77	73	75	54	67	81
1.80	66	78	73	75	54	69	82
1.85	66	80	72	76	54	71	84
1.90	66	82	72	76	54	73	86
1.95	66	85	72	78	54	76	88
2.00	66	89	72	80	54	80	92

X[2]

x=x2 Y	f1	f2	f3	f4	f5	f6	f7
0.03	0	0	0	3	0	0	5
0.05	0	0	0	12	0	0	14
0.10	0	10	11	24	0	0	26
0.15	0	19	18	30	0	0	33
0.20	7	27	23	35	0	0	38
0.25	13	32	28	39	0	0	41
0.30	18	37	29	42	0	0	45
0.35	23	42	31	45	3	2	48
0.40	25	45	33	47	6	9	51
0.45	28	49	35	48	9	14	53
0.50	28	51	36	50	12	19	56
0.55	26	54	37	51	14	24	58
0.60	27	56	38	53	15	28	60
0.65	28	57	38	54	17	32	61
0.70	29	59	38	55	18	35	63
0.75	30	60	38	56	20	37	64
0.80	31	61	38	57	20	39	65
0.85	33	61	36	57	21	40	66
0.90	35	62	32	58	22	41	66
0.95	37	62	16	59	21	43	67
1.00	40	63	33	59	21	44	68
1.05	43	64	41	60	18	45	69
1.10	46	65	47	60	11	47	70
1.15	49	67	51	60	13	48	71
1.20	53	68	55	61	25	50	73
1.25	56	69	59	61	32	52	74
1.30	60	71	63	62	38	55	75
1.35	65	72	68	63	44	59	78
1.40	70	75	73	67	50	64	82
1.45	78	81	82	77	59	73	90
1.50	91	92	95	91	73	86	102
1.55	77	78	81	79	60	72	88
1.60	72	75	77	76	57	68	83
1.65	70	75	75	75	55	67	81
1.70	68	76	74	75	54	67	80
1.75	67	77	73	75	54	67	81
1.80	66	78	73	75	54	69	82
1.85	66	80	72	76	54	71	84
1.90	66	82	72	76	54	73	86
1.95	66	85	72	78	54	76	88
2.00	66	89	72	80	54	80	92

[Figure 9]


A
SET showXDependency.
901
CALL onDraw.
902
DISPLAY MAIN GRAPH.
903
904
IS showXDependency SET?
No
908
END
Yes
CALL drawSubPlot.
905
906
No
MOUSE RIGHT BUTTON CLICKED?
Yes
RESET showXDependency.
907

[Figure 10] (10/11)

CMomentView class pseudo code

[Main Routine]
// definition
xData: CMomentDoc data
xIndex: an index denoting a specificCMomentData
selection: specification of one of f_1, f_2, f_3, ... to be displayed on the main graph
showXDependency: a flag denoting whether to display sub-plotted data
subPlotPosition: a position for displaying sub-plotted data

// Processing

// 1. Obtaining a display screen size
getScreenSize()

// 2. Setting items on the main graph, such as horizontal axis range, vertical axis range, grid, plotting color, plotting line type, font, etc.
setMainGraphAttribute()

// 3. Calculating place and size for drawing a graph
setGraphPositionAndSize()

// 4. Reading xData
getData(xData, xIndex)

// 5. Displaying part of xData selected by "selection" on the main graph
drawMainGraph(xData, xIndex, selection)

// 6. Displaying sub-plotted data
drawSubPlot(xData, xIndex, selection, showXDependency,subPlotPosition);

[Figure 11] (11/11)

DETAILS OF SUBROUTINE drawSubPlot()

```
// definition
subPlotYIndex: an index denoting the position of a variable Y to be isolated by sub-plotting
subPlotY[]: a value of data to be sub-plotted

// 6.1 When displaying sub-plotted data
  if(showXDependency) {
    // 6.1.1 Selecting the position of a variable Y to be sub-plotted
        subPlotYIndex=setSubPlotY();
    // 6.1.2
        For example, in order to reference to the data in the variable Y of the
        CMomentData class instance denoted by xIndex, selected in 6.1.1 at
        selection=f1;
        xData -> setIndex(xIndex);
        xData ->X() -> setIndex(subPlotYIndex);
        subplot[xIndex]=xData ->X() -> f1();
        The above processings are repeated for each instance of the CMomentData
        class specified by sub-plottingxIndex.

    // 6.1.3 Setting size and position of sub-plotting
        For example, 1/4 height of the size of the main plotting in the vertical direction
        and size in the horizontal direction in proportion to the number of plotting
        parameters d.  The position denotes a position where the mouse button is
        clicked.
      setSubPlotSize();

    // 6.1.4 Setting both maximum and minimum values of the vertical axis of sub-plotting
        For example, the values are set to be equal to the maximum and minimum
        values of data which exhibit the maximum and minimum values.
      setSubPlotAttribute();

    // 6.1.5  Drawing sub-plotting
      drawSubPlot()
} // end of if (showXDependency)
```